

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A medical needle extending along a predetermined direction and having a vertical cross-section taken along a plane perpendicular to the predetermined direction of which cross-sectional area varies based upon a distance from a needle tip, the medical needle, comprising:

a plurality of maximal points where the cross-sectional area of the vertical cross-section is locally maximal; and

a plurality of minimal points where the cross-sectional area of the vertical cross-section is locally minimal;

wherein the vertical cross-section at the maximal point closest to the needle tip has the cross-sectional area not less than those at any other maximal points, and

wherein the vertical cross-section between the needle tip and the maximal point closest to the needle tip is gradually and continuously increased in accordance with the distance from a needle tip.

2. (Original) The medical needle according to Claim 1, further comprising:
at least one channel formed therein extending along the predetermined direction and having at least one opening.

3. (Original) The medical needle according to Claim 2, further comprising:
a holding member connected to a needle rear;
wherein the holding member has at least one chamber in communication with
the channel.

4. (Original) The medical needle according to Claim 1, further comprising:
at least one groove extending along the predetermined direction.

5. (Original) The medical needle according to Claim 4, further comprising:
a holding member connected to a needle rear;
wherein the holding member has at least one chamber in communication with
the groove.

6. (Previously Presented) The medical needle according to Claim 1,
wherein when viewed on a projected plane parallel to the predetermined
direction, the cross-sectional area varies in a linear manner between one of maximal
points and the adjacent one of the minimal points.

7. (Currently Amended) The medical needle according to Claim 1,
wherein the vertical cross-section has a shape selected from a group consisting
of triangle, quadrangle, hexagon, polygon, semi-circle, circle, ~~and ellipse,~~ and
trapezoidal.

8. (Original) The medical needle according to Claim 1,
wherein the vertical cross-section at the maximal point closer to the needle tip
has the cross-sectional area greater than that at another maximal point closer to the
needle rear.

9. (Original) The medical needle according to Claim 1,
wherein the vertical cross-sections at the minimal points have the same cross-
sectional area to each other.

10. (Original) The medical needle according to Claim 1,
wherein the vertical cross-section at the minimal point closer to the needle tip
has the cross-sectional area less than that at another maximal point closer to the
needle rear.

11. (Original) The medical needle according to Claim 1,
wherein the cross-sectional area of the vertical cross-section at the minimal
point closest to the needle rear is less than those at any other minimal points.

12. (Original) The medical needle according to Claim 1,
wherein a distance between a pair of the adjacent maximal points is
substantially equal to one between another pair of the adjacent maximal points.

13. (Original) The medical needle according to Claim 1,
wherein a pair of the adjacent maximal points closer to the needle tip is more
spaced than another pair of the adjacent maximal points closer to the needle rear.

14. (Original) The medical needle according to Claim 1, further comprising a
grating.

15. (Original) The medical needle according to Claim 1,
wherein the needle tip has a radius of curvature of 10 μm or less.

16. (Original) The medical needle according to Claim 1, further comprising a slit
extending along the predetermined direction.

17. (Original) The medical needle according to Claim 1,
wherein the medical needle is made of biocompatible material.

18. (Original) The medical needle according to Claim 1,
wherein the medical needle is made of biodegradable material.

19. - 31. (Canceled)

32. (Currently Amended) A medical device including a medical needle
extending along a predetermined direction and having a vertical cross-section taken

along a plane perpendicular to the predetermined direction of which cross-sectional area varies based upon a distance from a needle tip, the medical needle, comprising:

a plurality of maximal points where the cross-sectional area of the vertical cross-section is locally maximal; and

a plurality of minimal points where the cross-sectional area of the vertical cross-section is locally minimal;

wherein the vertical cross-section at the maximal point closest to the needle tip has the cross-sectional area not less than those at any other maximal points, and

wherein the vertical cross-section between the needle tip and the maximal point closest to the needle tip is gradually and continuously increased in accordance with the distance from a needle tip.

33. (Previously Presented) The medical needle according to Claim 1, wherein when viewed on a projected plane parallel to the predetermined direction, the cross-sectional area varies in a curved manner between one of maximal points and the adjacent one of the minimal points.

<End of Claims Listing>